From:	Jeff.Keiser@CH2M.com
To:	Cynthia.Draper@amec.com
Cc:	Saric, James; BUCHOLTZP@michigan.gov; LCFORTEN@GAPAC.com; gtgriffi@GAPAC.com; garret.bondy@amec.com; Patricia.White@CH2M.com; Ryan.Mitchell@CH2M.com; Frank.Dillon@CH2M.com; KingTW@cdmsmith.com
Subject:	Draft Area 2 SRI Modeling Comments
Date:	Wednesday, January 29, 2014 10:40:57 AM
Attachments:	US EPA DRAFT COMMENTS ON THE AREA 2 SRI MODELING.pdf

---

Cynthia,

Attached are the draft comments on the Area 2 SRI Modeling. I repeated several of Patty's original Area 2 SRI comments on the modeling in this attachment so you would see them together. If you have any questions, please let me know and we can set up a conf call with the modelers to discuss.

Thanks JK

Jeff Keiser
Project Manager
135 S. 84th Street, Suite 400
Milwaukee, WI 53214
Direct – 414 847-0382
e-Fax -- 414 454-8766
Mobile 414 467-4893
www.jkeiser@ch2m.com
Solutions without Boundaries

US EPA DRAFT COMMENTS ON THE AREA 2 SRI MODELING

GENERAL COMMENTS
Commenting Organization: EPA **Commenter: White**
General Comment: 1

The report states that the hydrodynamic model results will be "merged" with sediment grain size data to characterize sediment transport and deposition as part of future modeling work. As discussed in the June 28, 2013 conference call, a sediment transport model is not going to be developed. The SRI report should identify areas of potential sediment and PCB erosion and transport based on hydrodynamic model results and mobility thresholds based on critical shear stress estimates.

SPECIFIC COMMENTS

Commenting Organization: EPA **Commenter: Mitchell**
Section: ES **Page: ES-ix** **Lines: End of paragraph 4**
Specific Comment: 2

Text states "*Generally, finer-grained, uncompacted materials are more easily transported than coarse-grained sediment.*"
This statement should clarify that it is referring only to non-cohesive sediment. This statement is not true for cohesive sediments which are likely present in the exposed banks and in the floodplain. Furthermore, the report does not state whether cohesive sediments are present or describe their relative importance at this particular site. If cohesive sediments are present they will exert a first-order control on sediment transport.

Commenting Organization: EPA **Commenter: Mitchell**
Section: ES **Page: ES-x** **Lines: First sentence**
Specific Comment: 3

Text states "…*mobilization of floodplain soil via erosion into the river is not expected to be a major transport mechanism during base flow or moderate flow conditions such as the 2 year flood event.*"
This statement is not consistent with the model results shown for the 2-YR event (Exhibit 5-21) which shows extremely high shear stresses in the floodplain, well above the critical shear stress for the particle sizes present. However, the shear stress results appear to be incorrect (see General comment 16).

More broadly however, this statement seems to dismiss the idea that PCBs could be mobilized from the floodplain through the processes of bank erosion, or an avulsion of a relic channel braid, at moderate flows such as a 2-YR event. This portion of the Executive Summary should be revised after the specific comments related to the modeling results are addressed.

Commenting Organization: EPA **Commenter: Mitchell**
Section: ES, Fate and Transport/Conceptual Site Model **Page: ES-x** **Lines: entire section**
Specific Comment: 4

The Conceptual Site Model section of the ES should include a summary of the river's geomorphic characteristics and current trends. What are the general characteristics of the backwatered braided reach? Is the reach aggrading or incising? Have historic events (i.e. removal of Plainwell Dam) affected the rivers current geomorphic trends? How stable is the lateral plan form? What are the first-order controls on sediment transport? What are the relative PCB source contributions (X% upstream, Y% from bank erosion, and Z% from bed erosion)?

Commenting Organization: EPA **Commenter: Mitchell/White**
Section: ES Page: ES-x Lines: First paragraph
Specific Comment: 5

State the purpose and objectives of the model. What questions is the model intended to evaluate? These need to be explicitly stated in order for the results and interpretations to be useful. As discussed in the June 28, 2013 conference call to discuss the hydrodynamic modeling effort, the following objectives were identified: (1) identify areas of concern with respect to potential erosion and downstream transport of PCB-contaminated sediment and floodplain soil under various flow conditions, including an extreme (100-year) flow event; (2) assess the potential for future exposure of buried PCB contamination in areas where surface sediment PCB concentrations are acceptable; and (3) evaluate both dam-in and dam-out scenarios.

Commenting Organization: EPA **Commenter: Mitchell/White**
Section: ES Page: ES-x Lines: Fourth paragraph
Specific Comment: 6

Text states: "*Bed shear stress is important for future assessment of sediment transport, erosion, deposition, and the resulting morphological evolution.*"
Bed shear stress can only provide insight into thresholds for erosion, or rates of erosion if the sediments are cohesive. Deposition and morphological change cannot be predicted based on bed shear stress alone. This text and any interpretations made on this premise are overstating the value of a single hydrodynamic output (shear stress). The modeling objectives discussed in the June 28, 2013 conference call did not include sediment transport modeling to assess sediment transport patterns or morphological evolution. The text should be revised to accurately reflect the modeling objectives and approach.

Commenting Organization: EPA **Commenter: Mitchell**
Section: ES Page: ES-x Lines: Last paragraph
Specific Comment: 7

Text states: "*The areas that exhibit higher concentrations in sediments, Subareas D1 and E, have low shear stress values and low velocities, even under high flow conditions (25-year and 100-year flood conditions), for the dam-in scenario indicating that PCBs are unlikely to mobilize under current conditions.*"
It's hard to read the precise shear stress values but they appear to be greater than 1 lb/ft^2 in which case they would be mobile. More generally, the shear stress values shown on the exhibits are extremely high - too high to be reasonable. There is either an error in the unit labeling or the calculation of bed shear stress is incorrect (see General Comment 16).

Cite the reference used as the basis of comparison between modeled shear stress to threshold shear stress (critical shear stress), if such a quantitative comparison was made.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 2.1.1 **Page: 2-1** **Lines:**
Specific Comment: 8

Specify whether each of the surveys was single-beam or multi-beam surveys.

Add a figure showing the actual data so readers can see the resolution and extent of each survey. The figure showing the final terrain model only shows the final product after interpolation.

This section should also describe the available topographic data.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 3.4.1 **Page:** **Lines:**
Specific Comment: 9

Text states: "*These lacustrine deposits in the impoundment consist of interbedded, organic-rich silt and clay, fine to medium sand, and some gravel (Rheaume et al. 2004).*"
This qualitative description is not particularly useful. The quantitative measures are of primary concern, especially the percent clay (or percent finer than 9 microns) as it relates to cohesion. The erodability of the lacustrine material should be central to the discussion and the degree of cohesion is of fundamental importance.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 3.5.1 **Page:** **Lines:**
Specific Comment: 10

This section needs to include a discussion of geomorphology. Understanding the geomorphic trends is essential, especially in the context of considering the "no action" and MNR alternatives in the future.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.1.2.1 **Page:** **Lines:**
Specific Comment: 11

Text states: "*In sinuous and meandering streams, bank erosion is most often focused on the outside of a meander bend, with the eroded sediment from one bank typically being deposited downstream, on the inside of the meander bend to form a point bar.*"
This reach is not a sinuous meandering stream - it is a braided channel - the geomorphic processes are radically different in a braided system. Braided streams are typically over supplied with sediment, or are transport limited (in this case caused by the backwater). This leads to aggradation and filling of existing channel braids, forcing overbank flows to cut new channels, or reoccupy relic channels in the floodplain. These systems are typically dynamic and unstable. Lateral bank erosion may also occur (as described here) but the dominant channel dynamics are very different from the processes described here for a meandering channel and

the conclusions drawn about the stability of the floodplain sediments are at odds with the characteristic of a braided channel system. Revise this section accordingly.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.1.2.2 **Page:** **Lines:**
Specific Comment: 12

Text states: *"Given the generally flat topography and well-vegetated state of most of the floodplain in Area 2, mobilization of floodplain soil via erosion into the river is not expected to be a major transport mechanism.*
What about development of new braided channels that cut vertically through the floodplain sediments? Exhibit 1-3 that compares the channel plan form over a 61-year period shows significant planform change which is evidence that the system is dynamic and quite capable of continuing to erode into the contaminated floodplain. Couldn't this also be a significant source of PCBs to the river?

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.1.3 **Page: 5-3** **Lines:**
Specific Comment: 13

This is an overly generalized description of cohesive sediments with no discussion of site-specific information. The degree of cohesion in fine-grained sediments varies greatly (as a function of mineralogy, percent clay, cation exchange capacity, organic content, salinity, etc.) and can either have a negligible effect or provide a first-order control on erosion and sediment transport. All relevant site specific data should be reported here and the implications as they relate to the role of cohesion at this site should be discussed in this section.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3 **Page: 5-5** **Lines:**
Specific Comment: 14

This section introduces two modeling scenarios but fails to state the purpose and objectives of the model in general and the specific objectives for each scenario. Incorporate the modeling objectives discussed in June 2013 as identified in Specific Comment X.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1 **Page: 5-6** **Lines:**
Specific Comment: 15

Revise the section titled "River Reach Description" to report the channel slope - a fundamental reach-scale characteristic that provides tremendous insight into the rivers potential power and its ability to mobilize sediment.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1.1 **Page:** **Lines:**
Specific Comment: 16

Table 5-1 is displayed without any introduction or description of the analysis behind it. The table should be introduced after the supporting narrative.

In the following paragraph the text states: "*Time series of mean daily flows were developed for the Kalamazoo River at the former Plainwell Dam and at Otsego City Dam, and for Gun River at its confluence, by adjusting the flows from the Comstock station in proportion to drainage area. These mean daily flow data were used to compare the range of flows expected by month for the Kalamazoo River at Otsego City Dam (Figure 5-2).*"

- First, explain why data from the USGS gage at Plainwell Dam wasn't used as the basis for characterizing flows at Plainwell Dam and thus why an alternate method was needed to estimate flows at Plainwell Dam. Presumably the data were not used due to the relatively short period of record. Nevertheless, the measured data should still be compared with estimated flows to validate the approach.
- Secondly, the method used to estimate flows for Gun River is inappropriate. Adjusting flows by the ratio of their drainage areas is only appropriate when the two locations are on the same river and the adjustment is modest and unaffected by reservoirs or diversions. Using a ratio of areas approach on the Gun River violates the basic premise of the methodology - that the two watersheds have similar characteristics. The drainage area of the Kalamazoo River at Comstock is 10 times larger than the Gun River. The runoff characteristics of the Gun River would be expected to be much more "flashy" and experience higher peak flows per area and lower low-flows per area compared to the Kalamazoo. This pattern is even observable in the relationship between the largest and smallest watersheds compared in Appendix G. Low flows/area at Comstock are 20% lower than those at Richmond and 20% higher/area at high flows and their watershed areas are much more similar. The Gun River flow estimates are very crude - low flow are not low enough and the high flow estimates are too low. More accurate peak flow estimates may have been developed by FEMA. Check the local FEMA Flood Insurance Study.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1.1 **Page:** **Lines:**
Specific Comment: 17

Text states: "*Comstock peak flow estimates that had been adjusted in proportion to drainage area were found to be within 10 percent greater than (and mostly within 5 percent greater than) data for the Fennville Station. This indicated that nonlinearity of flows was a relatively small effect. The flows used in DELFT3D modeling were also adjusted proportional to area and found to compare well with the two sets of peak flow data.*
Three comments:

- A difference of 10% in peak flows is not insignificant. A 10% difference can be the difference between a 50-year flood and a 100-yr flood.
- The relationship is well known to be nonlinear and there are commonly used power functions that account for this nonlinearity. The ratio of drainage areas is often raised to the power of around 0.9. There may be regional coefficients publish for this area.
- What's the difference between the adjusted Comstock flows and the flows used in the DELFT3D model? Clarify this narrative.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1.2 **Page: 5-9** **Lines:**
Specific Comment: 18

Text states: *"Available water elevation and flow data were used to estimate the hydraulic roughness parameter (Manning n-values) rather than making this estimate from grain size data."*
State, or reference, the specific water surface elevation data available. Describe how the hydraulic roughness parameters were developed from this data, or reference the section that describes this analysis.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1.2 **Page: 5-9** **Lines:**
Specific Comment: 19

The last paragraph describing physical sediment characteristics includes only a qualitative description of the particle sizes present. List the quantitative fractions or provide the soil classification. The particle sizes range from clay to gravel. The mix of these fractions is critical to the mobility of bed.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.1.2 **Page: 5-10** **Lines:**
Specific Comment: 20

Text states: *"Syed et al (2005) used a median surface sediment size of 0.0625 to 1.609 mm upstream of the Otsego City Dam. Wells et al (2003) defined channel sediments for modeling as being 95 percent silt/clay and 5 percent sand."*
Reporting pre-SRI or SRI lab results would be more useful than citing what others have reported. Either explain why literature values were used, or update using site-specific grain size data.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 **Page: 5-10** **Lines:**
Specific Comment: 21

This section describes two different scenarios and the range of flows to be modeled. List the purpose and objective for each scenario and flow.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 **Page: 5-10** **Lines:**
Specific Comment: 22

The report says that all flow simulations used steady-state analysis – add a narrative to justify why a steady-state simulation is appropriate. It's difficult for a reviewer to judge the appropriateness of this approach since the modeling objectives were not stated. For example, if the modeling objective is to estimate the maximum 100-YR water surface elevation (WSE), then a steady-state flow is appropriate. But if the objective is to identify the maximum bed shear stresses throughout the model domain, or when thresholds are exceeded, then a dynamic

(unsteady) simulation is needed because transient processes are critically important, especially in a free-flowing to backwater transition. Peak shear stresses do not occur at peak water surface elevation, at all locations.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 Page: 5-11 Lines:
Specific Comment: 23

Clarify what the bullet list represents – there is no common theme for the items listed. These bullet items should be moved to the relevant sections of the report and described in greater detail.

Provide a much more detailed discussion for Bullets 5-7. It's unclear what revisions were made and why. Boundary conditions are critically important parameters and therefore warrant a more robust discussion.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 Page: 5-12 Lines:
Specific Comment: 24

Table 5-12 is not introduced anywhere in the text. Presumably the numbers shown represent the water surface elevations used to define the downstream boundary. Please introduce the table and describe the methods, and or data, used to derive the rating curve. Also, make note of any changes made to the rating curve as alluded to in the bullet list on the previous page.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 Page: 5-13 Lines:
Specific Comment: 25

A one-sentence paragraph in the middle of page 5-13 reads: "*Water surface profiles, cross-section plots, and output tabulations are included in Appendix G.*" This statement has no introduction, context, or explanation for why results from a 1D HEC-RAS model are being referenced and reported? It was stated earlier that a 1D model was not appropriate at this site due to the presence of braided channels. So if the model is not appropriate, why are the results being shown? If there's a good reason for including them, please state why and provide some background information (context) for the 1D model.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2 Page: 5-13 Lines:
Specific Comment: 26

Text states: "*In the process of developing the cross-section geometry, multiple sources of floodplain data were utilized including the following:*" Provide the context for this statement. Why were cross-sections being developed? The model requires a continuous surface, not cross sections like a 1D requires. Also, the text lists multiple survey sources - were the datums of each data source verified and corrected as necessary? NGVD29 is a rather old datum that isn't commonly used anymore - were the 2012 surveys really conducted in this old datum?

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2.1 Page: 5-13 Lines:
Specific Comment: 27

First sentence of the section says: *"DELFT3D modeling was based on a 5-meter (m) grid resolution…"* DELFT3D uses a curvilinear grid where the primary axis is intended to follow the bank lines. This is necessary to ensure that the bank-lines are boundary-fit. When a curvilinear grid is boundary fit (aligned with) to the bank line, like it should be, the adjacent grid cells become either elongated or compressed; therefore, not all the grid cells are the same size. Please correct the text or explain how the grid cell size is 5m by 5m, and clarify whether the banks are boundary fit. The range of cell sizes should be reported. Also, please provide a figure showing the final grid.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2.1 Page: 5-14 Lines:
Specific Comment: 28

In the second paragraph, please report the resolution of the survey data in the main channel. It should be higher than the model grid resolution of 5 meters.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2.3 Page: 5-14 Lines:
Specific Comment: 29

The third paragraph describes extensive interpolation of bathymetric data in the side-channels. Great caution should be used when interpolating results from the side channels since the bathymetric data is missing. This is true for all other areas where the bathymetry was interpolated and not based on measured data. The report should highlight areas were bathymetry was interpolated and state that there is uncertainty in the results in those areas.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.2.3 Page: 5-16 Lines:
Specific Comment: 30

Table 5-6: Explain why only one value was used for the entire channel bottom. The substrate in the backwatered reach is silt/sand while the free flowing reach is composed of gravel. The skin friction flow resistance will be different between these two reaches. This could explain why the errors are larger in the upper free-flowing reach – a separate n-value for this reach could improve the calibration.
A footnote should also be added stating that the floodplain values have not been calibrated. Please provide a citation for the roughness values assigned to the floodplain. They are very high (nearly double the commonly used values). Please justify the use of such high roughness coefficients. If the n-values are too high in the floodplain, the resulting velocities will be too low, thus under estimating the erosion risk. A more conservative approach would be to err on the side of using lower roughness values in the floodplain (lacking any high flow calibration data).

Commenting Organization: EPA **Commenter: Mitchell**

Section: 5.3.2.3 Page: 5-18 Lines:
Specific Comment: 31

First paragraph: *"There is a good match between the calibrated model and the elevation data at staff gages 3 and 4. The calibration suggests that a re-survey of the staff gage scales and the sill elevations at Otsego City Dam (staff gage 2) would be of value to confirm these elevations on a consistent vertical control."*
The calibration is quite good at low flow at all three sites, but there's a positive correlation between the residuals and flow, and presumably residuals and flow depth. This means that the residuals will increase at higher flows. The modeled water surface elevations are too high for all of the relatively higher flows (>2,000 cfs) which are of greater importance. The calibration should focus on getting a better match at the higher flows. The low flow calibration is not only less relevant to the processes of sediment transport, but the reason for the residuals at low flow is actually more likely to be caused by inaccurate, or low resolution, bathymetry rather than errors in the roughness parameterization. The calibration should be improved for the higher flows (2,000 -3,000 cfs), and consider ignoring the low flow calibration point.

The fact that residuals increase as a function of flow indicates that there may be a larger problem with the flow resistance formulation used by DELFT3D. The residual pattern also suggests that the roughness formulation needs more flow, or depth, dependency. Is the flow resistance formula a function of flow or depth? Flow resistance should decrease with increasing depth - this is a well documented in the literature and incorporated in many of today's models - how is this handled in DELFT3D?

The calibration flows are quite low relative to the flows of interest and having residuals that increase with increase with flow is an indication that the model errors at the higher flow rates could be substantial, especially with the use of such high floodplain roughness values as commented on earlier. This issue should be addressed when scoping future data collection and modeling efforts.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.3.1 Page: 5-19 through 5-20 **Lines:**
Specific Comment: 32

Comment applies to sections 5.3.3.1 through 5.3.3.3
Tie the presentation of results to the specific modeling objectives. Without stated objectives, there is no context for the presentation of results. There are no questions to answer, or findings to report. The interpretations provided are simple generalizations that could have been made without a 2D hydraulic model.

The ultimate purpose of the model is to characterize the hydraulics and the potential mobility of contaminated sediment in the existing system and to quantify the changes caused by removing the dam. More specifically the model should be used to help answer the following questions:
- What are the bed mobility thresholds? At what flow rate do we expect respective areas to become mobile? When do the known hot spots become mobile? A first look at this can easily be done by comparing shear stresses over a range of flows to critical shear stress thresholds.

- If the dam is removed how does that affect bed shear stresses and how does that affect sediment mobility?
- Does the reservoir behind the Otsego Dam provide any attenuation of peak flow? This is critical to know if dam removal is being considered. If the dam provides hydraulic attenuation, then downstream peak flows, and flood risk, would be increased if it were to be removed.

These objectives should be clearly stated at the beginning of the section 5-3 along with a description of the overall purpose of the model.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.3.4 **Page: 5-20** **Lines:**
Specific Comment: 33

First bullet states: "*The new modeling effort provides detailed shear stress values across the main channel and floodplain areas that can be merged with sediment size gradations to develop sediment transport and depositional capabilities in the study reach as part of future modeling work.*" Please clarify what you mean by "merged". As discussed in the conference call on June 28, 2013, sediment transport modeling will not be performed. Instead, mobility thresholds would be estimated based on critical shear stress. Areas of potential sediment and PCB mobility should be identified in the SRI report based on hydrodynamic model results and mobility thresholds based on critical shear stress.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.3.4 **Page: 5-20** **Lines:**
Specific Comment: 34

The report needs to include a new subsection describing the assumptions and limitation of the 2D hydraulic model and its results.
For example:

- Some of the erosive processes that exist in Area 2 are highly complex and cannot be accurately identified, or predicted, with a 2D model. Processes such as bank erosion, erosion from vegetated surfaces, local scour, and avulsions of relic channel braids. Model results should be used in conjunction with field data and geomorphic assessments to comprehensively evaluate the risks of sediment and PCB transport.

Commenting Organization: EPA **Commenter: White**
Section: 5.3.3 **Page:** **Lines:**
Specific Comment: 35

First paragraph, last sentence: please correct the figure references to read "Figure 5-12 to 5-35."

Commenting Organization: EPA **Commenter: White**
Section: Table 5-7 **Page:** **Lines:**
Specific Comment: 36

Table 5-7 shows units of lbs/ft/s^2 for maximum bed shear stress. Should these units be lbs/ft^2, or possibly N/m^2?

Commenting Organization: EPA **Commenter: White**
Section: 5.4 **Page: 5-25** **Lines:**
Specific Comment: 37

First paragraph: "Locations OCEP-7, OCEP-6, OCEP-5, and OCEP-12 lie in areas with relatively elevated bank shear stresses. As a result, erosion and material movement would be more likely to occur…which is in accordance with the results of the erosion pin survey." This appears to be the case for locations OCEP-7 and OCEP-6, but locations OCEP-5 and OCEP-12 either don't show erosion (OCEP-5 and 12A) or are not in an area of relatively higher shear stress (OCEP-12B).

Commenting Organization: EPA **Commenter: White**
Section: 5.4 **Page: 5-25** **Lines:**
Specific Comment: 38

The potential impacts of flows on PCB transport are described in terms of the relative magnitude of bottom shear stresses (i.e., PCBs in areas of relatively lower shear stresses are not expected to migrate). However, potential PCB mobility is related to whether the bottom shear stresses exceed the critical shear stress, not to whether the shear stress is relatively higher or lower than another location. Conclusions regarding erosion and transport should be deferred to FS (see GP's response to EPA specific comment 85 on the draft Area 2 SRI report).

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.4 **Page: 5-21** **Lines:**
Specific Comment: 39

The CSM is lacking a basic description of the river's current geomorphic trends. For example, is the river channel aggrading, degrading, or in dynamic equilibrium? How did the channel respond to the sediment release from removing Plainwell Dam? Is it still responding?

The CSM is also lacking a description of current hydraulic conditions which could be obtained from the modeling effort. The current CSM should include some of the most basic hydraulic characteristics such as the reach channel slope, threshold discharges for mobility of the channel bed, threshold conditions for the known hot spots, and the attenuation affect of the reservoir (if any).

The CSM should be updated once the model has been applied with the specific objectives of characterizing the existing system. Currently there is a substantial hydraulic knowledge gap, but the tools exist for filling it.

Commenting Organization: EPA **Commenter: Mitchell**
Section: 5.4 **Page: 5-22** **Lines:**
Specific Comment: 40

The third paragraph implies that PCBs in the floodplain are at low risk of becoming mobilized. Yet, braided rivers are known to be highly dynamic and are known to reoccupy historic abandon braided channels. Avulsions through abandoned braids are very common and should

be considered a moderate risk for PCB transport. The risk of mobilizing PCBs from relic channels should at least be acknowledged.